

# Myofascial TrPs Pain Syndrome

## Perpetuating factors

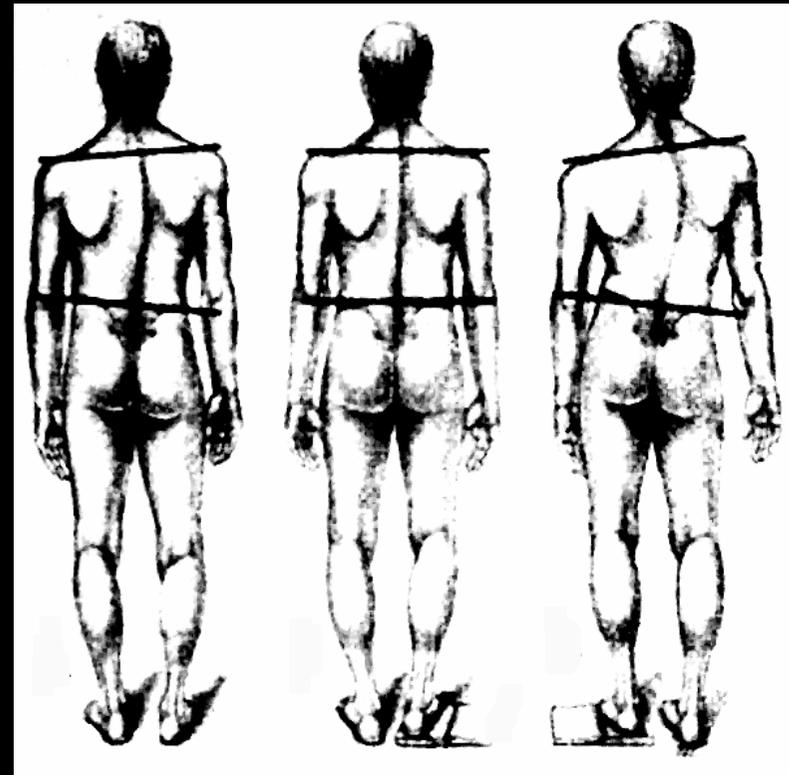
### Mechanical:

### Structural Inadequacies

### The short leg syndrome

A. Short right leg- Right iliac crest is lower than the left. Compensatory contraction of left Quadratus Lumborum, brings left rib cage down towards left iliac crest, curving the thoracic spine to the left and dropping the left shoulder. The right lateral cervical muscles right the head and levels the eyes.

B. Corrected with lift under right foot.



A

B

C

# Myofascial TrPs Pain Syndrome

## Perpetuating factors

### Mechanical: Structural Inadequacies

The small hemipelvis: Asymmetry in the height of the two halves of the pelvis, causes a functional scoliosis when the patient is seated. The stress on the muscles is the same as for the short leg syndrome, as the head is maintained in the erect posture with the eyes level. Rx small cushion on the affected side.

The long second metatarsal: Knife edge foot balance, the foot pronates internally rotating the the leg at the knee and hip producing MTrPs in peroneous longus, vastus medialis and Gluteus Medius.

# Myofascial TrPs Pain Syndrome

## Perpetuating factors

### Mechanical: Structural Inadequacies

**Short upper arms:** Persons with relatively short upper arms experience postural stresses on shoulder girdle muscles when sitting in chairs that would normally give adequate arm support. Leaning to one side gives rise to trigger points in quadratus Lumborum. Inadequate arm support maintains MTrPs in trapezius.

# Myofascial TrPs Pain Syndrome

## Perpetuating factors

### Mechanical:

**Posture.** Poke chin, sway back, locked knees etc..

**Work practice-Ergonomics.**

**Clothes.** Tight constrictive clothing can produce MTrPs due to sustained muscle compression. Eg. Jeans related buttock pain, Bra strap headache, wallet sciatica.

# Myofascial TrPs Pain Syndrome

## Perpetuating factors

### Systemic.

Metabolic, endocrine, toxic, inflammatory etc.

Commonly found systemic factors include

Hypothyroidism, folic acid and Iron deficiency.

Toxic: alcohol.

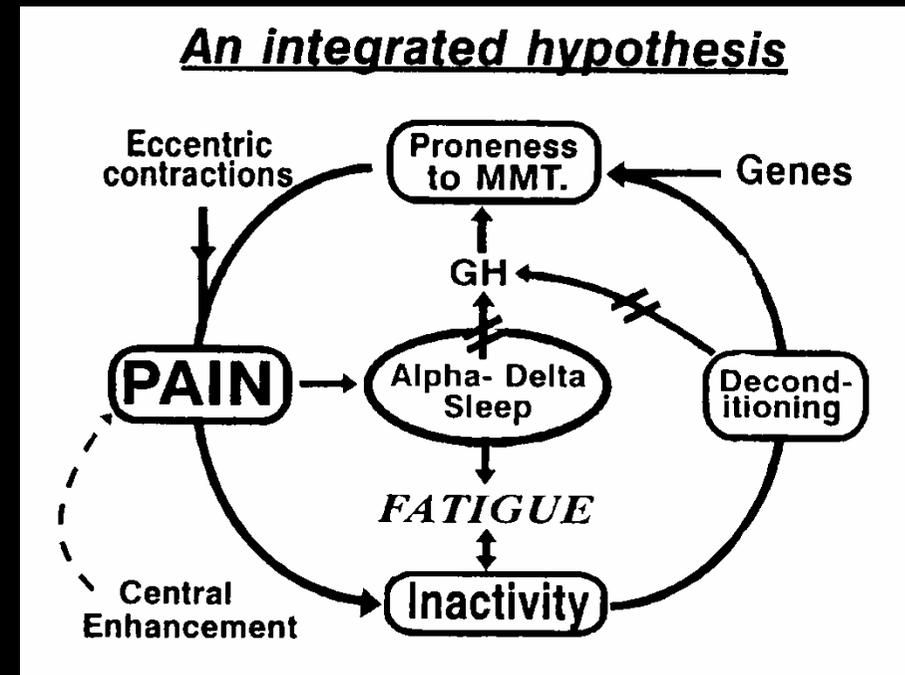
Metabolic - Inflammatory: gout.

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# Myofascial TrPs Pain Syndrome

## Perpetuating factors

Relative Growth Hormone deficiency has recently been suggested as playing a pivotal role in MTrPs syndromes. ( As growth hormone is necessary for muscle repair and its secretion is related to deep sleep which is frequently disturbed in patients with pain. )



MMT = Micro muscle trauma

# Myofascial Trigger Points Are?

At present there are three hypotheses:

- The Energy crisis theory
- The muscle spindle concept
- The motor endplate hypothesis

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# The Trigger Point

The Histology of the Trigger Point  
Is unremarkable.

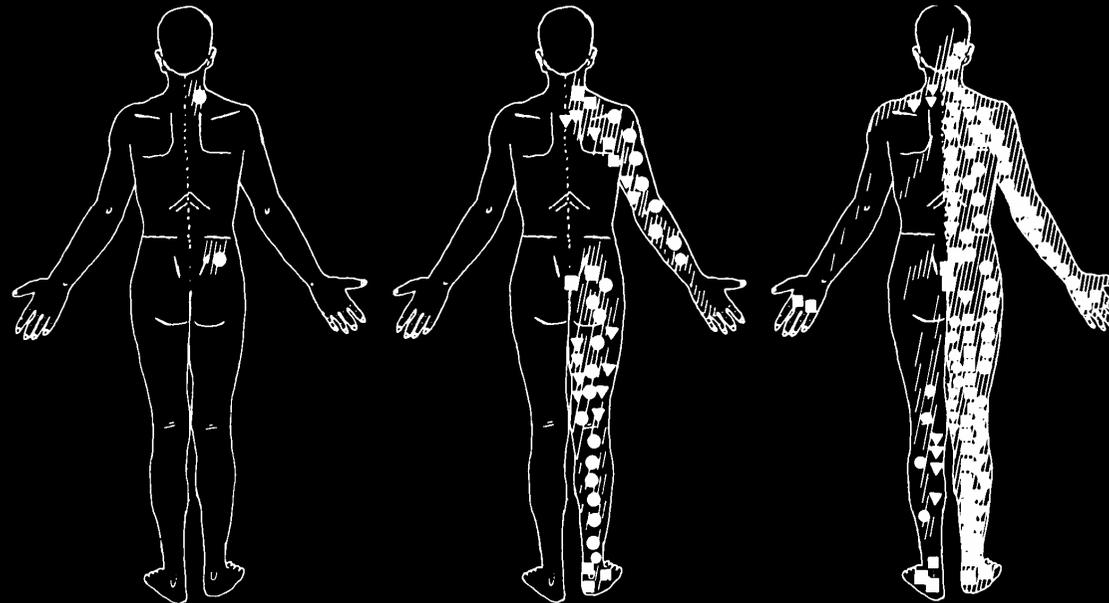
Most modern studies have shown signs  
consistent with oxidative stress.

[ Implicating abnormal activity as opposed to  
gross anatomical change ]

# Other Related Syndromes with TrPs or “Tender Points”

- Myofascial pain syndromes..... [ 20 - 30% Incidence ]
- Regional Pain Syndrome..... [ ? incidence ]
- Fibromyalgia..... [ 3 - 5% ]

*Are they part of a continuum?*



# Regional Pain Syndrome

**Regional pain syndromes** for example cervicobrachial syndrome, non-discogenic sciatica are characterised by **regional spontaneous pain and hyperalgesia.**

Allodynia, dysesthesia and low level vasomotor and sudomotor disturbances are common. As are sleep disturbance and fatigue. The pain is described as dull or burning ache with intermittent sharp severe pain....Professor Littlejohn (Monash)

These conditions frequently evolve from discrete myofascial pain syndromes and possibly represent the consequences of induced abnormal autonomic activity.....SL Strauss

# Fibromyalgia

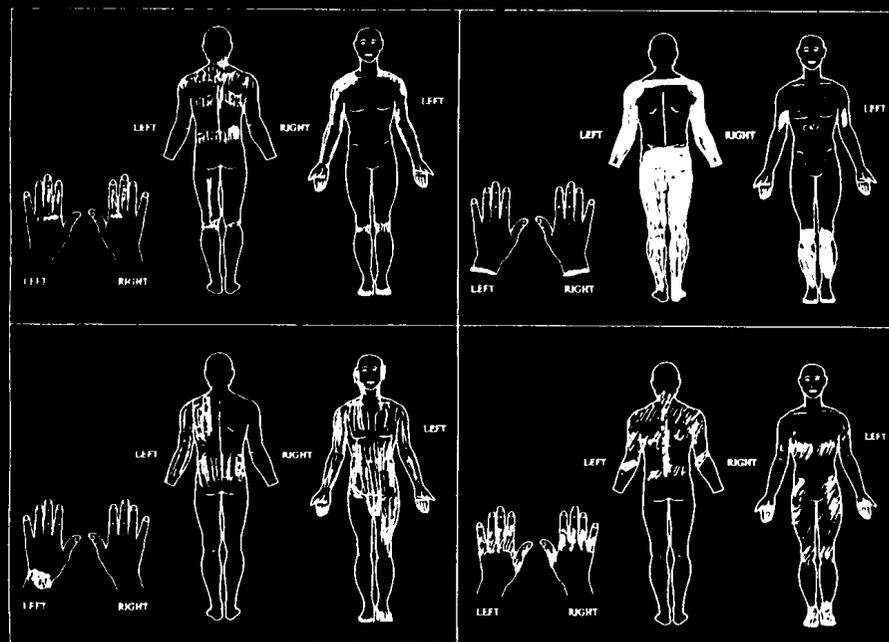
## Fibromyalgia Diagnostic criteria:

1. A history of widespread pain of at least 3 months duration.

Pain is considered as Widespread when all of the following are present-

Pain in left side of body, Pain in right side of body, Pain above and below the waist plus axial skeletal pain [ cervical spine or anterior chest or thoracic spine or low back ] must also be present.

FIGURE 2. Pain diagrams from 4 patients with fibromyalgia. Note the widespread and contiguous nature of the pain complaint.



# Fibromyalgia Diagnostic criteria:

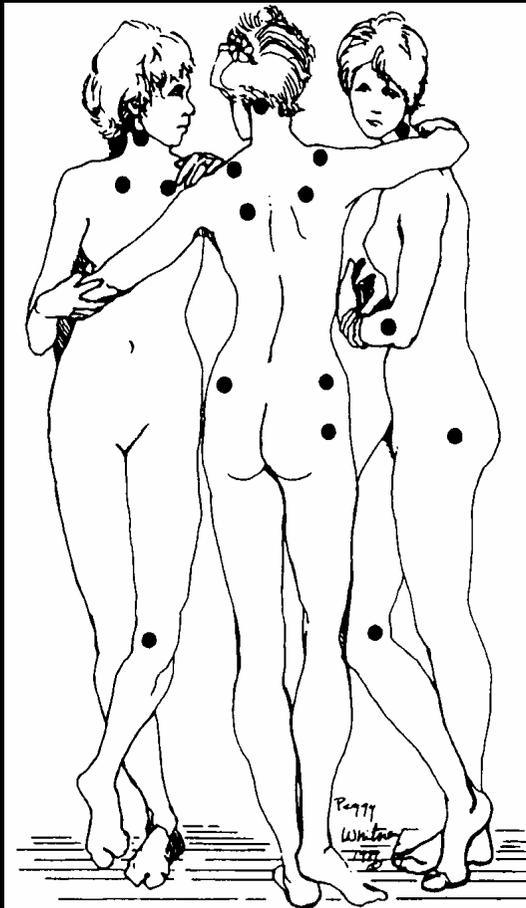
2. Pain in 11 of 18 designated tender point sites on digital palpation.

3. Plus some or all of the following:

Sleep disturbance, fatigue, anxiety, headache, irritable bowel syndrome, subjective swelling, numbness as well as modulation of symptoms by activity, weather factors and aggravation by stress or anxiety.

# Fibromyalgia Diagnostic criteria:

Pain in 11 of 18 tender point sites on digital palpation.



Digital palpation should be performed at around 4kg and must be declared as “painful”.

( The description tender is not considered as painful )

# Designated Painful Sites

Occiput: at insertion of suboccipital muscles

Lower cervical: at the anterior aspect of the intertransverse spaces at C5 - C7

Trapezius: midpoint of upper border.

Supraspinatus: at origins above scapula spine medial border

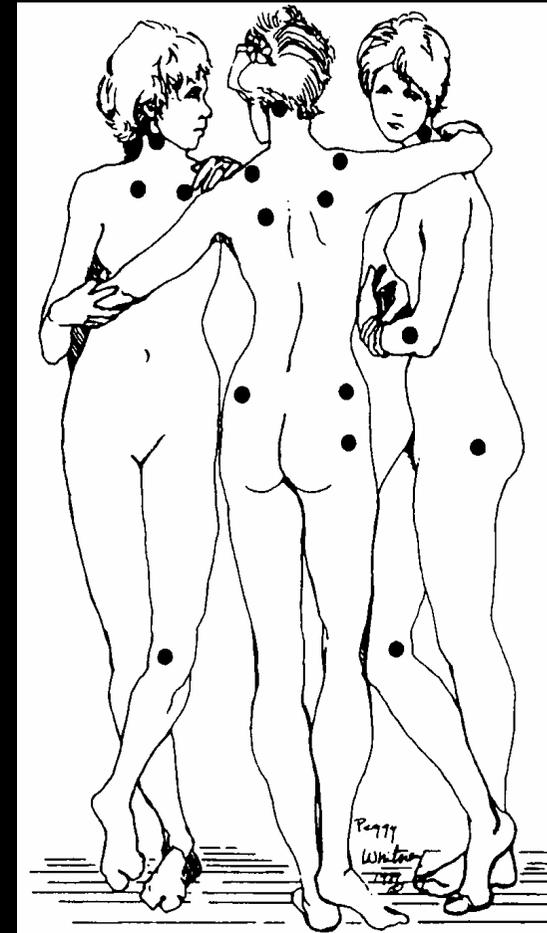
2nd Rib: second costochondrial junction, just lateral.

Lateral epicondyle: 2cm distal to epicondyles

Gluteal: upper outer quadrant, anterior fold of muscle

Greater trochanter: posterior to the trochanteric prominence

Knees: medial fat pad, proximal to the joint line



# Other Related Syndromes with TrPs or “Tender Points”

TI: Fibrositis/fibromyalgia: a form of myofascial trigger points AU: Simons-DGSO: Am-J-Med. 1986 Sep 29; 81(3A): 93-8 ISSN: 0002-9343 PY: 1986 LA: ENGLISH HCP: UNITED-STATES AB:

The diagnostic criteria for fibrositis and primary fibromyalgia are similar to those for myofascial pain syndromes due to trigger points. Tender points in muscles are likely to be myofascial trigger points; nonmuscular tender points clearly are not myofascial trigger points, but may be areas of tenderness referred from such trigger points. Myofascial trigger points refer pain to a distance and restrict range of motion of the muscle. They are associated with a palpable taut band that exhibits a local twitch response of the muscle, and they are responsive to treatment. Persistence of myofascial trigger points is due to perpetuating factors that can usually be corrected. Although their number is unknown, it is likely that some patients who are diagnosed as having fibrositis / Fibromyalgia have multiple myofascial trigger points aggravated by a powerful perpetuating factor and also have a systemic disease process independent of the myofascial trigger points.

Since myofascial pain syndromes are treatable, these patients would benefit greatly by identification and relief of the myofascial component of their pain.

# The Trigger Point Story

( Where East Meets West)

- “Where there is a painful spot, there is an Acupuncture point” from the Neijing- The Yellow Emperor’s Classic - 1,000+ B.C.
- When pressed on the Patient winces, or suddenly starts and exclaims “**AAGH Is The POINT!**”  
From Acupuncture a Comprehensive Text: Shanghai College of Traditional Chinese medicine
- **Ah Shi - Oh Yes!** as the patient’s pain complaint is reproduced by palpation. Nanking College of TCM

# The Trigger Point Story ( Where East Meets West )

## Pathogenic Factors

### T.C.M.

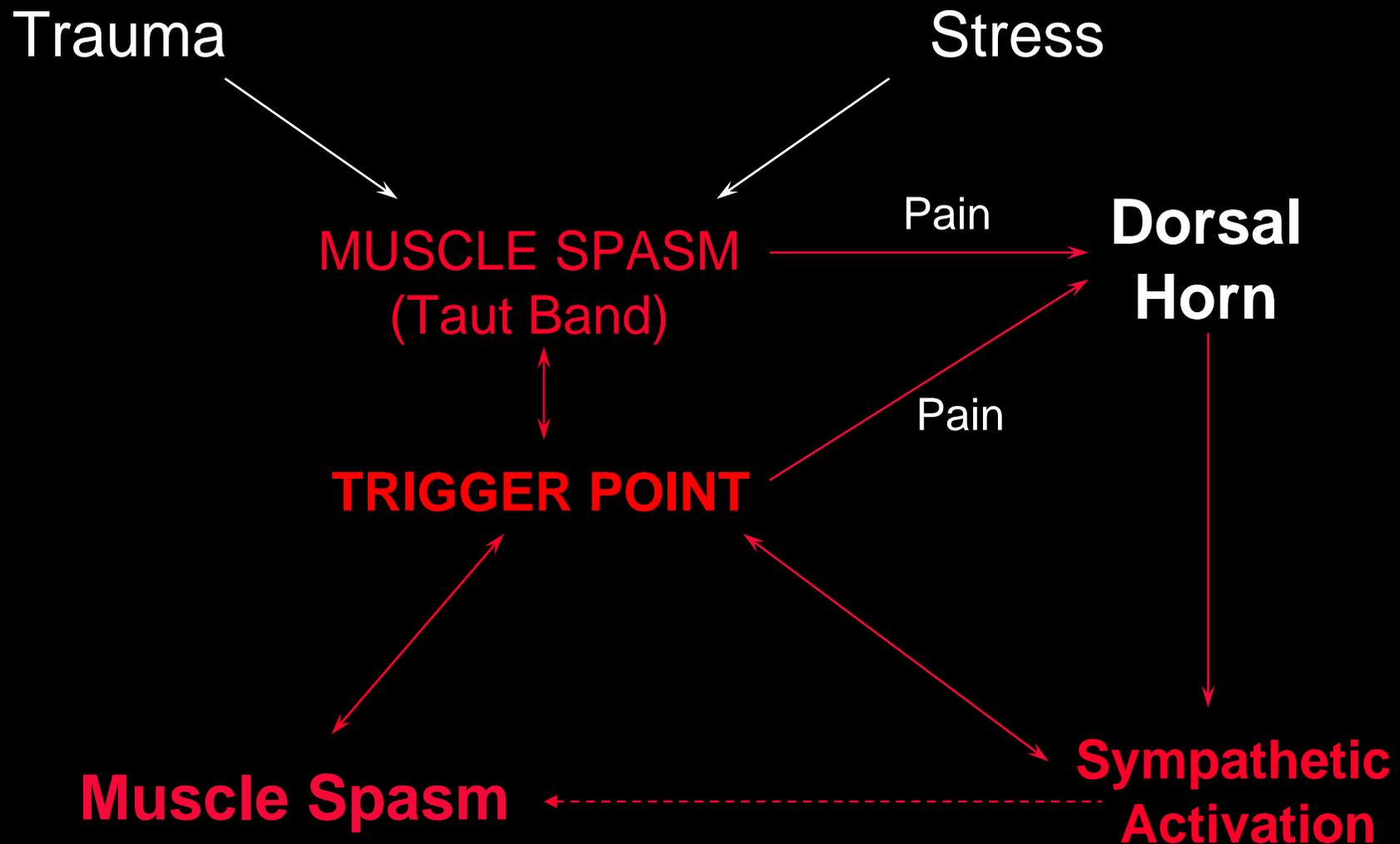
- Over-exertion
- Invasion by “Cold”  
Eg Chilling of a muscle  
by cool wind or cold  
following exertion.
- Prolonged Inactivity
- Visceral disturbance

### West

- Acute overload
- Overwork Fatigue
- Chilling
- Gross Trauma
- Other Trigger Points
- Emotional distress
- Visceral disturbance

# The Trigger Point Story

## Pathogenesis (Simon's view)



# The Trigger Point Story

## Pathogenesis

TI: Needle electromyographic evaluation of trigger point response to a psychological stressor.AU:

McNulty-WH; Gevirtz-RN; Hubbard-DR; Berkoff-GMAD: California School of Professional Psychology-San Diego 92121.SO: Psychophysiology. 1994 May; 31(3): 313-6 ISSN: 0048-5772PY: 1994LA: ENGLISHCP: UNITED-STATESAB:

Fourteen subjects were evaluated by needle electromyography in a trapezius myofascial trigger point and simultaneously in adjacent nontender trapezius muscle fibers during a control condition (forward counting), a stressful condition (mental arithmetic), and resting baselines. Based on recent data implicating autonomic innervation in muscle function, we hypothesized that the trigger point would be more responsive than the adjacent muscle to psychological stress.

**The results showed increased trigger point electromyographic activity during stress, whereas the adjacent muscle remained electrically silent.**

These results suggest a mechanism by which emotional factors influence muscle pain. This may have significant implications for the psychophysiology of pain associated with trigger points.

# The Trigger Point Story

## Pathogenesis

Myofascial trigger points show spontaneous needle EMG activity.

AU: Hubbard-DR; Berkoff-GMAD: Department of  $\square$  Neurosciences, University of California, San Diego.SO: Spine. 1993 Oct 1;18(13): 1803-7ISSN: 0362-2436PY: 1993LA: ENGLISHCP: UNITED-STATES AB:

Monopolar needle electromyogram (EMG) was recorded simultaneously from trapezius myofascial trigger points (TrPs) and adjacent nontender fibers (non-TrPs) of the same muscle in normal subjects and in two patient groups, tension headache and fibromyalgia.

Sustained spontaneous EMG activity was found in the 1-2 mm nidus of all TrPs, and was absent in non-TrPs. Mean EMG amplitude in the patient groups was significantly greater than in normals.

The authors hypothesize that **TrPs are caused by sympathetically activated intrafusal contractions**

# The Trigger Point Story

## Pathogenesis

**TI: The effects of myofascial trigger point injections are naloxone reversible.**

AU: Fine-PG; Milano-R; Hare-BD AD: Department of Anesthesiology, University of Utah Health Sciences Center, Salt Lake City 84132.

SO: Pain. 1988 Jan; 32(1): 15-20 ISSN: 0304-3959 PY: 1988 LA: ENGLISH

CP: NETHERLANDS

AB: Ten patients with myofascial trigger point pain were entered into a double-blind cross-over study of the reversibility of myofascial trigger point injection (TPI) effects with naloxone versus placebo in order to test the hypothesis that the benefits of TPI are mediated, at least in part, through activation of an endogenous opioid system. Injection of trigger points with 0.25% bupivacaine decreased pain in all subjects and increased range of motion in subjects who, on initial assessment, demonstrated limitations of movement of the affected part(s). Allodynia and palpable bands preceding TPI when present also showed reduction after TPI. All improvements afforded by TPI were significantly reversed with intravenous naloxone (10 mg) compared to intravenous placebo. These results demonstrate a naloxone-reversible mechanism in TPI therapy. [This suggests an endogenous opioid system as a mediator for the decreased pain and improved physical findings following injection of myofascial trigger points with local anesthetic.](#)

# Myofascial Trigger Points

## Diagnostic factors

- Have specific pain referral patterns.
- Are frequently outside of the area of the patient's perceived pain.
- Trigger point activity stimulates regional / segmental sympathetic outflows.
- The area of the perceived pain is usually cool or cold.
- TCM's Cold Bi

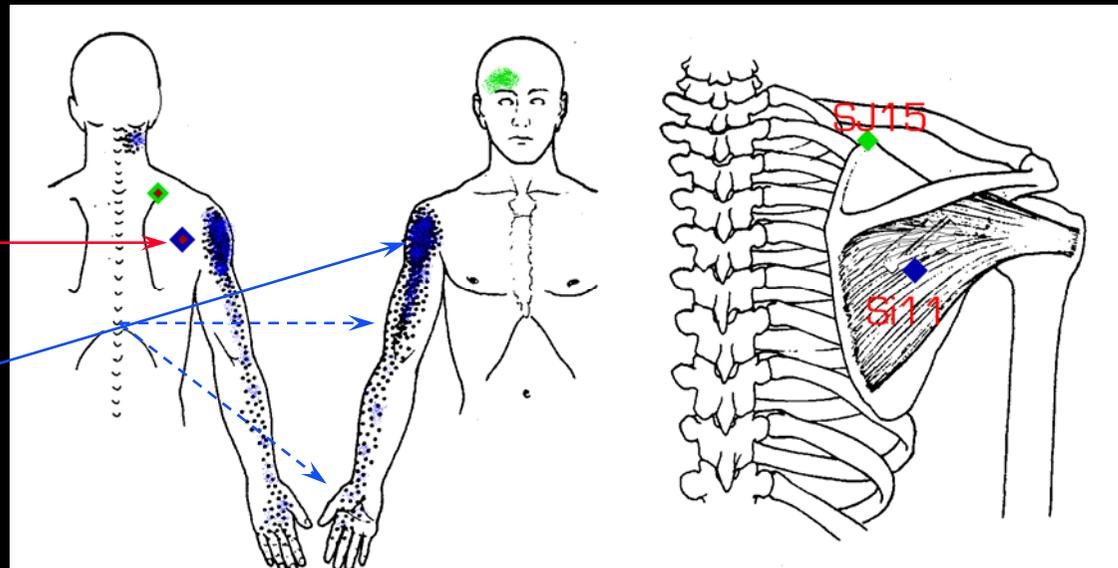
# Trigger Points

The muscle containing the active Trigger Point is frequently found by recognising the Patient's Pain Pattern.

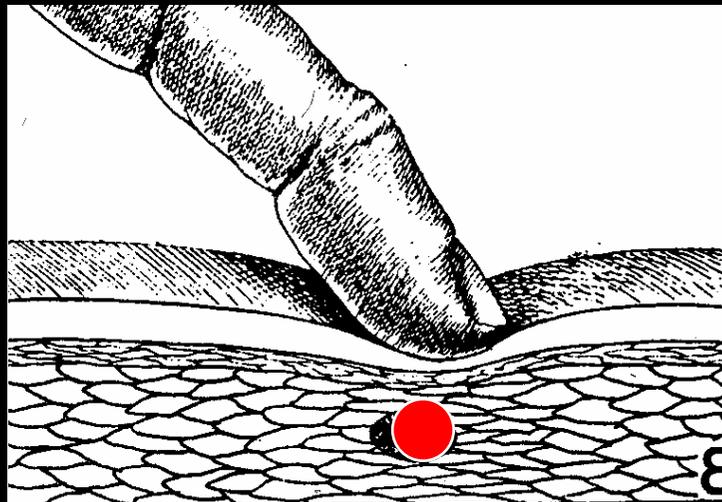
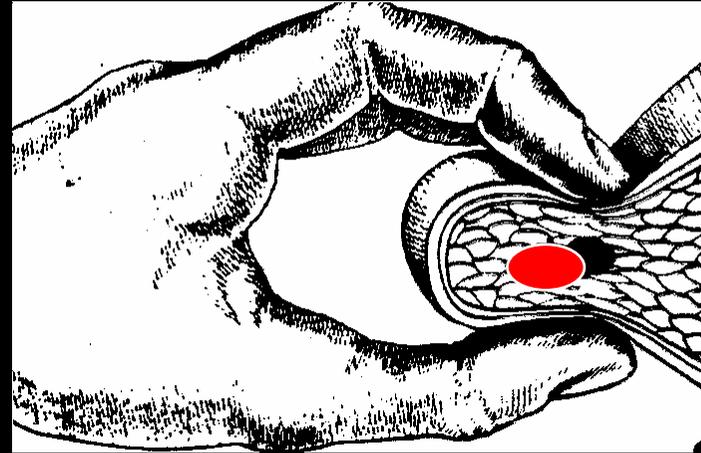
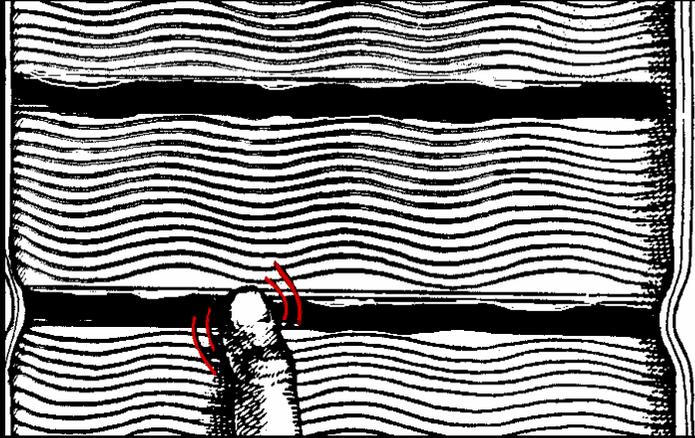
TrP

Perceived Pain

Frequently cold  
Paraesthesia  
Numbness



# Myofascial Trigger Point Diagnosis



Palpation is the Key!

Exquisite Spot Tenderness

'Palpable Muscle Band'

Local Twitch

Jump Sign

Patient Recognition

# Myofascial Trigger Points

## *Clinical Features: Diagnostic Value & Difficulty*

<u>Examination</u>	<u>Difficulty</u>	<u>Diagnostic value</u>
Spot Tenderness	+	++
Jump Sign	+	+
Pain Recognition	++	+++
Palpable Band	+++	++++
Referred Pain	+++	+
Twitch Response	++++	++++

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